What is claimed is:

1. An implantable endoluminal graft, comprising:

(a) a microporous metal thin film covering comprised of a metallic material having pseudoelastic properties; and

(b) a structural support element underlying the microporous metal thin film covering comprised of a metallic material and further comprised of at least a pair of cylindrical elements and interconnecting members joining adjacent cylindrical elements;

(c) wherein the structural support element is attached to the microporous metal thin film covering by at least one point of contact between the microporous metal thin film covering and the structural support element.

2. The implantable endoluminal graft of claim 1, wherein the at least one point of contact is positioned proximate either a proximal end or distal end of the microporous metal thin film covering and a corresponding end of the structural support element.

3. The implantable endoluminal graft of claim 1, wherein the at least one point of contact is proximate a distal end of the microporous metal thin film covering and structural support element.

4. The implantable endoluminal graft according to Claim 1, wherein the structural support element further comprises at least one affixation member proximate a terminal end of the structural support element.

5. The implantable endoluminal graft of claim 4, wherein the microporous metal thin film covering is attached to the at least one affixation member.

6. The implantable endoluminal graft of claim 1, wherein the cylindrical elements adopt a sinusoidal pattern with alternating peaks and valleys.

7. The implantable endoluminal graft of claim 6 wherein the interconnecting members join adjacent cylindrical elements either peak-to-peak or valley-to-valley.

8. The implantable endoluminal graft according to Claim 4, wherein the cylindrical elements adopt a sinusoidal pattern with alternating peaks and valleys and the at least one affixation member extends longitudinally from at least one of a peak or a valley at a terminal end of the structural support element.

9. The implantable endoluminal graft of claim 8, wherein the microporous metal thin film covering exhibits a uniform pattern of openings throughout the surface of the microporous metal thin film covering.

10. The implantable endoluminal graft of claim 9, wherein the microporous metal thin film covering and the structural support member are fabricated from nitinol.

11. The implantable endoluminal graft of claim 10, wherein the microporous metal thin film covering maintains a martensite crystalline structure throughout a temperature transition from room temperature to body temperature and behaves martensitically *in vivo*.

12. The implantable endoluminal graft of claim 10, further comprising a structural support member that undergoes a phase transition, from martensite to austenite crystal structure, during a temperature transition from room temperature to body temperature and behaves austenitically *in vivo*.

13. The implantable endoluminal graft of claim 10, further comprising a microporous metal thin film covering that maintains an austenite crystalline structure throughout a temperature transition from room temperature to body temperature and behaves austenitically *in vivo*.

14. The implantable endoluminal graft of claim 10, further comprising a microporous metal thin film covering that undergoes a phase transition, from martensite to austenite crystal structure, during a temperature transition from room temperature to body temperature and behaves austenitically *in vivo*.

15. The implantable endoluminal graft of claim 1, wherein the at least one point of contact further comprises a projection projecting proximally or distally from a cylindrical element at a terminal end of the structural support member.

16. The implantable endoluminal graft of claim 1, wherein a width of the cylindrical elements are narrower at the apices of a peak and a valley than at other segments of the cylindrical elements.

17. The implantable endoluminal graft of claim 16, wherein each interconnecting element has opposing ends thereof that connect to either a peak or a valley of an undulating cylindrical element and that have a width less than a width of an intermediate section of the interconnecting member.

18. An implantable endoluminal graft, comprising:

(a) a microporous metal thin film covering comprised of a shape memory alloy having an austenite phase transition start temperature greater than 37° C; and

(b) a structural support element underlying the microporous covering comprised of at least a pair of cylindrical elements and interconnecting members joining adjacent cylindrical elements at nearly identical angular points along the circumference of the cylindrical elements, the structural support element further comprised of a shape memory alloy having an austenite phase transition start temperature less than 0° C;

(c) the structural support element being attached to the microporous metal thin film covering at at least one point of attachment between the microporous metal thin film covering and the structural support element.

18. The implantable endoluminal graft of claim 17, wherein the shape memory alloy is nitinol.

17. The implantable endoluminal graft of claim 17, wherein the microporous metal thin film covering maintains a martensite crystalline structure throughout the temperature transition from room temperature to body temperature.

18. The implantable endoluminal graft of claim 17, further comprising a structural support member that undergoes a phase transition, from martensite to austenite crystal structure, during the temperature transition from room temperature to body temperature.

19. The implantable endoluminal graft of claim 17, wherein the at least one point of contact is located at either near a proximal end or distal end of the microporous metal thin film covering and corresponding end of the structural support element.

20. The implantable endoluminal graft of claim 17, wherein the at least one point of contact is located at near a distal end of the microporous metal thin film covering and structural support element.

21. The implantable endoluminal graft of claim 17, wherein the cylindrical elements adopt a sinusoidal pattern with alternating peaks and valleys.

22. The implantable endoluminal graft of claim 21, wherein the interconnecting members join adjacent cylindrical elements either peak-to-peak or valley-to-valley.

23. The implantable endoluminal graft of claim 17, wherein the microporous metal thin film covering exhibits a uniform pattern of openings throughout the surface of the microporous metal thin film covering.

24. The implantable endoluminal graft of claim 17, wherein the at least one point of contact is on a terminal end of a terminal interconnecting member.

25. The implantable endoluminal graft of claim 17, wherein the width of the cylindrical elements are narrower at and near the apices than at other segments of the cylindrical elements.

26. An implantable endoluminal graft, comprising:

(a) a microporous metal thin film covering comprised of nitinol; and

(b) a structural support element underlying the microporous covering comprised of at least a pair of undulating cylindrical elements having a plurality of peaks and valleys and interconnecting members joining adjacent cylindrical elements at either the peaks or the valleys and having at least one projection extending longitudinally a terminal cylindrical element, the structural support element being comprised of nitinol,

(c) the structural support element being joined to the microporous metal thin film covering at the at least one projection.

27. The implantable endoluminal graft of claim 27, wherein the microporous metal thin film covering maintains a martensite crystalline structure throughout the temperature transition from room temperature to body temperature.

28. The implantable endoluminal graft of claim 28, wherein the structural support member that undergoes a phase transition, from martensite to austenite crystal structure, during the temperature transition from room temperature to body temperature.

29. The implantable endoluminal graft of claim 27, further comprising a microporous metal thin film covering that maintains an austenite crystalline structure throughout a temperature transition from room temperature to body temperature and behaves austenitically *in vivo*.

30. The implantable endoluminal graft of claim 27, further comprising a microporous metal thin film covering that undergoes a phase transition, from martensite to austenite crystal structure, during a temperature transition from room temperature to body temperature and behaves austenitically *in vivo*.

31. The implantable endoluminal graft of claim 28, wherein the microporous metal thin film covering exhibits a regular pattern of openings throughout a surface of the microporous metal thin film covering.

32. The implantable endoluminal graft of Claim 31, wherein the regular pattern of openings further comprises a plurality of elongate slots arrayed in circumferentially adjacent and longitudinally offset rows, each of the plurality of elongate slots being parallel to a longitudinal axis of the endoluminal graft and capable of opening under the influence of a circumferentially expansive force.